REGULATORY ANALYSIS

DRAFT REGULATORY GUIDE (DG) -1269, "MAINTENANCE, TESTING, AND REPLACEMENT OF VENTED LEAD-ACID STORAGE BATTERIES FOR NUCLEAR POWER PLANTS."

(Proposed Revision 3 of Regulatory Guide 1.129)

Statement of the Problem

NRC issued Regulatory Guide 1.129, Revision 2, in February 2007 to endorse (with certain clarifying regulatory positions) IEEE Std 450-2002 (Ref. 1). Since then IEEE has revised IEEE Std 450-2010, to refine the condition monitoring guidance and the use of rate-adjusted test methods for acceptance testing to ensure consistent performance. The revised IEEE standard provides an NRC-acceptable approach for maintaining the state of the charge and health of lead-acid storage batteries used in nuclear power plants. In addition, there are new findings from follow-up studies of NRC-sponsored research (Ref. 2) and plant-specific analysis and testing which indicate that Regulatory Guide 1.129 should be updated to address (1) evaluating the adequacy of the modified performance tests, (2) the use of charging current to assess the fully-charged condition of batteries and (3) determining the point at which a battery can be returned to service and be able to meet its capacity and capability requirements. Finally, Regulatory Guide 1.129 should be updated to be consistent with the Model Application for Plant-Specific Adoption of Traveler TSTF-500, Revision 2, "DC Electrical Rewrite-Update to TSTF-360," (Ref. 3).

Objective

The objective of this regulatory action is to assess the need to update Regulatory Guide 1.129, Revision 2, to address: (1) IEEE Std. 450-2010, (2) evaluating the adequacy of the modified performance tests for batteries, (3) the use of charging current to assess the fully-charged condition of batteries, (4) determining the point at which a battery can be returned to service and be able to meet its capacity and capability requirements, and (5) to make it consistent with the related changes to the standard technical specifications regarding battery-monitoring criteria.

Alternative Approaches

The NRC staff considered the following alternative approaches:

- Do not revise Regulatory Guide 1.129.
- Revise Regulatory Guide 1.129.

Alternative 1: Do Not Revise Regulatory Guide 1.129

Under this alternative, NRC would not revise guidance and the current guidance would be retained. If NRC does not take action, no changes would occur in costs or benefit to the public, applicants licensees, or NRC. However, the "no-action" alternative would not provide the public, applicants, and licensees with the NRC staff's recommendations on the suitability of IEEE Std. 450-2010, evaluating the adequacy of the modified performance tests, confirming the effectiveness of float current monitoring to verify adequate battery charge, determining the point at which a battery can be returned to service and be able to meet its capacity and capability requirements, and consistency with the Model Application for Plant-Specific Adoption of Traveler TSTF-500, Revision 2. NRC would continue to review each application on a case-by-case basis. This may result in staff requests for additional information which

will cause applicants and applicants for license renewal to expend resources to address the requests and NRC will expend resources in reviewing the replies.

Alternative 2: Revise Regulatory Guide 1.129

Under this alternative, NRC would revise Regulatory Guide 1.129 to endorse IEEE Std 450-2010 which is the most recent revision of IEEE Std 450-2002. In addition to endorsing IEEE Std 450-2010, as appropriate, a revision of the regulatory guide could utilize (1) the recommendations from the NRC sponsored research documented in NUREG/CR-7148 "Confirmatory Battery Testing: The Use of Float Current Monitoring to Determine Battery State-of-Charge," (Ref. 2) and (2) Traveler TSTF-500, Revision 2, "DC Electrical Rewrite-Update to TSTF-360," (Ref. 3). If Alternative 2 is adopted, applicants would be provided updated and current guidance that should reduce the need for staff to request additional information from them and the need for applicants to expend resources in responding to the requests. This would also reduce NRC staff time in reviewing the responses.

Conclusion

Based on this regulatory analysis, the NRC staff recommends revision of Regulatory Guide 1.129. Applicants would benefit by having updated guidance which should reduce the need for staff to request additional information which would result in applicants having to expend resources in responding to the requests. This would also reduce NRC staff time in reviewing the responses. The cost to NRC for revising the guidance is estimated to be modest in comparison with the potential benefits to applicants and staff reviewers.

References

1. Institute of Electrical and Electronics Engineers, IEEE Standard 450-2002, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications," Institute of Electrical and Electronics Engineers, Piscataway, NJ, 2011[1].

2. U.S. Nuclear Regulatory Commission, "Confirmatory Battery Testing: The Use of Float Current Monitoring to Determine Battery State-of-Charge," NUREG/CR-7148, Washington, DC, ADAMS Accession No. ML12284A296.

3. U.S. Nuclear Regulatory Commission, Model Application for Plant-Specific Adoption of Technical Specifications Task Force (TSTF) Traveler TSTF-500, Revision 2, "DC Electrical Rewrite-Update to TSTF-360," ADAMS Accession No. ML111751792.

[1] Copies of Institute of Electrical and Electronics Engineers (IEEE) documents may be purchased from the Institute of Electrical and Electronics Engineers Service Center, 445 Hoes Lane, PO Box 1331, Piscataway, NJ 08855 or through the IEEE's public Web site at http://www.ieee.org/publications_standards/index.html.